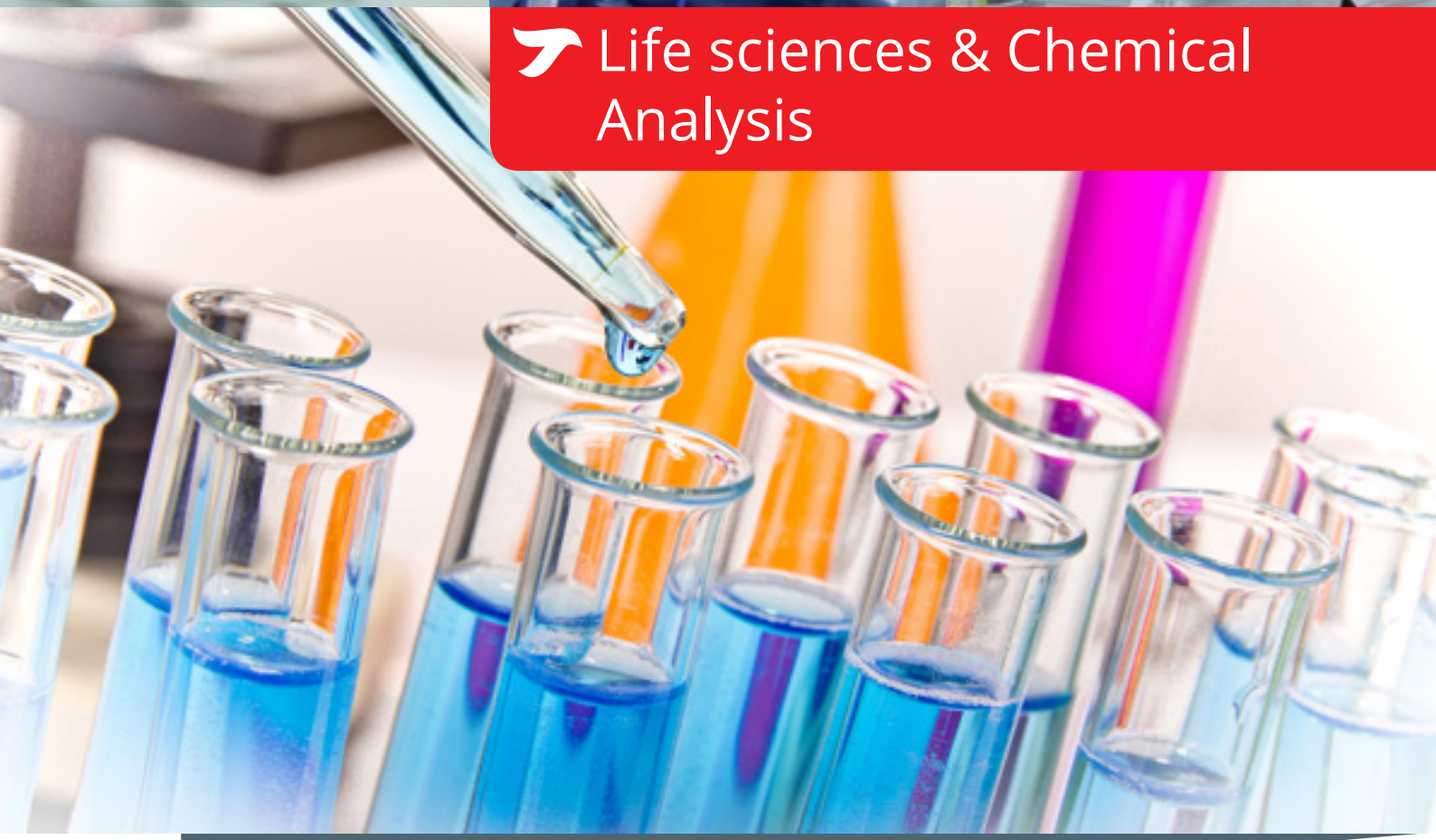
# Life sciences & Chemical Analysis



THERMOCOAX
ANALYSIS

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ANALYSIS

# IN-house production of MI cable

## Applications

- Temperature Vaporizer inlet
- Direct inlet probe systems
- Flexible GC/MS transfer line
- Adsorption  trap
- Desolvation nozzle
- Atmospheric pressure chemical
- Ionization (APCI) probe
- Ion sources heated probe
- Differential Scanning Calorimeter (DSC)
- Differential Thermal Analysis (DTA)
- Mass Spectrometer probe tip assembly
- Moisture Sorption analyzers heater
- Thermal Gravimetric analyzer
- Gas chromatograph
- Injectors LC/MS transfer lines
- Laboratory chemical reactors
- Reaction vessels sensors

# Our capabilities

**Our mission is to develop state-of-the art, complete thermal solutions and this through advanced innovation from conception, to prototype development right the way through to production. We offer tailor-made thermal systems, providing our customers with safer, cleaner and the most cost effective solutions :**

## The industry's most trusted Mineral Insulated Cable

- Design / thermal modeling
- Prototypes
- Production manufacturing
- Product support & engineering
- From cryogenic temperatures up to 1100°C
- Suitable with atmosphere to UHV environment
- Thermal modeling / simulation
- Experience in common and special materials (stainless steels, Inconel® alloys, nickel, tungsten, Aluminum, titanium...)
- From small up to large size devices
- Research & testing services

- True cold end heater (no connector on the cold/hot junction)
- Minimum bending radius 3 times the outer diameter
- High thermal flux > 6 W/cm2
- High dielectric withstand with an insulation resistance 1.13Ω.m at room temperature
- Small size heaters 0.5 mm outer diameter available

# THERMOCOAX

## Separation Technology

Gas Chromatograph (GC)

Liquid Chromatograph (LC)

Ion Chromatograph

Electrophoresis

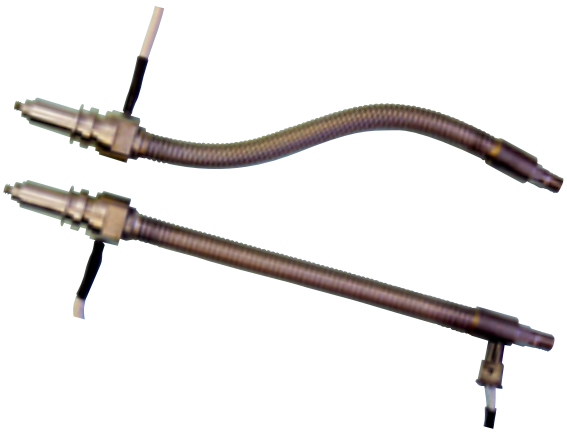
instrumentation

- Lower thermal masses with heater 0D as low as 0.5 mm
- Cleanness analytical standards with vacuum brazing technology
- Custom packaging available with plastic tray and vacuum sealed bags

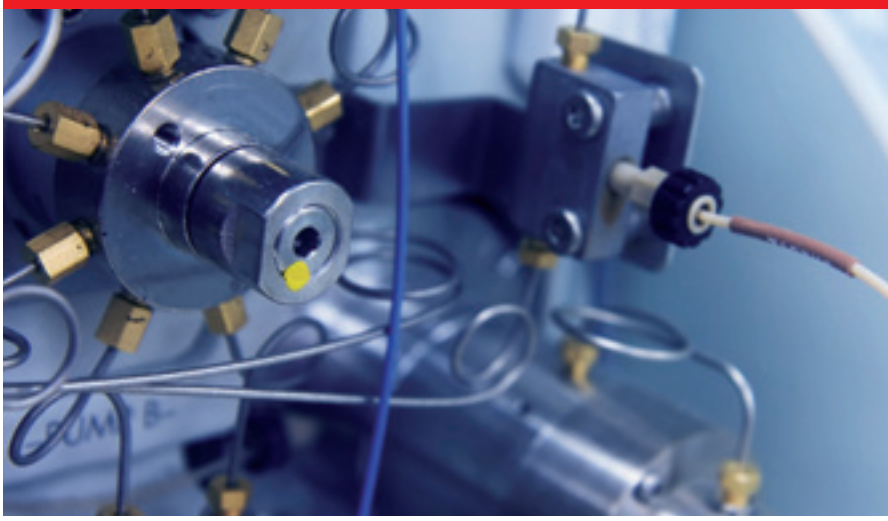
## Gas chromatography PTV inlet

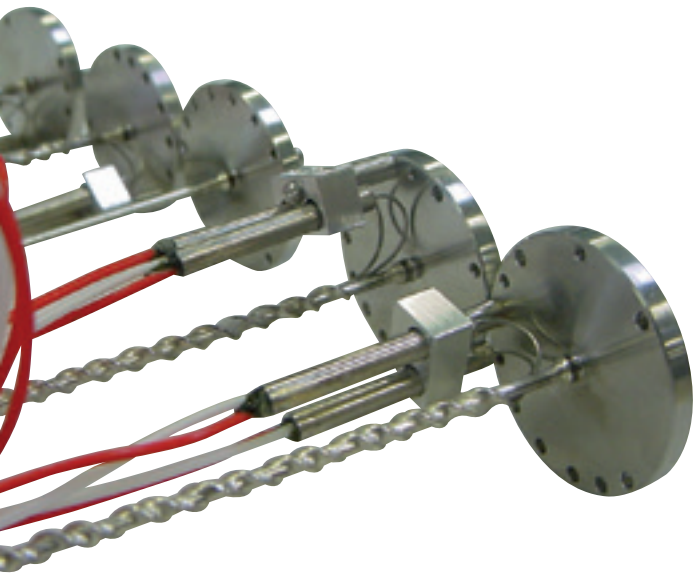
The essentials required for the method are an injection port through which samples are loaded, a «column» on which the components are separated. The temperature of the injection port, column, and detector are controlled by thermostated heaters.

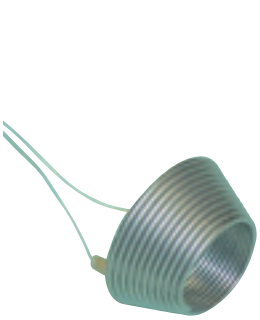
- **Temperature range**
  From room temperature to operation at 350°C
- **Heater**
  True cold end heaters with integrated thermocouple



## EASE OF OPERATION







# Molecular Analysis

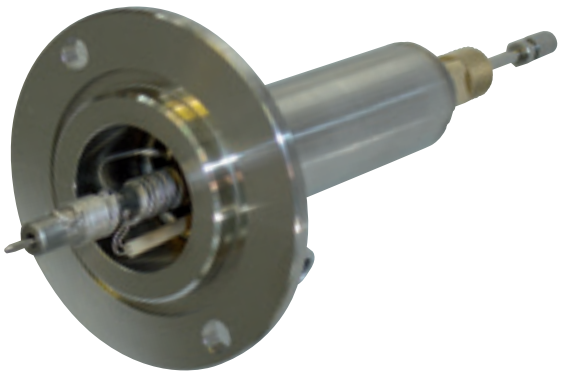
## Mass Spectrometer (MS)

- Quadrupole
- Ion trap
- Time of flight
- Magnetic

## Nuclear Magnetic Resonance (NMR)

## Moisture sorption analysis

- Improved heat distribution with customized thermal profile to compensate the heat effect due to the fitting on the machine
- Design engineered for low voltage power supply
- 2 wires heater hand wrapped with a different pitch to ensure temperature uniformity



## Direct inlet probe

Transfer of low volatile substances into the high vacuum ion source of the MS by a push rod

- Temperature range

Room temperature to 650°C – 12 V / 5 W Twin core heater with integrated thermocouple type K.

## Mass Spectrometer Transfer Line

Rigid and flexible versions for transferring the analytes from the separation unit (GC or LC) into the analytical spectrometer.

### MATERIAL

Stainless steel, vacuum brazed heater with varying distribution to obtain temperature uniformity ±2°C along full length.

### OPERATIONAL VOLTAGE AND POWER

24V – 110W

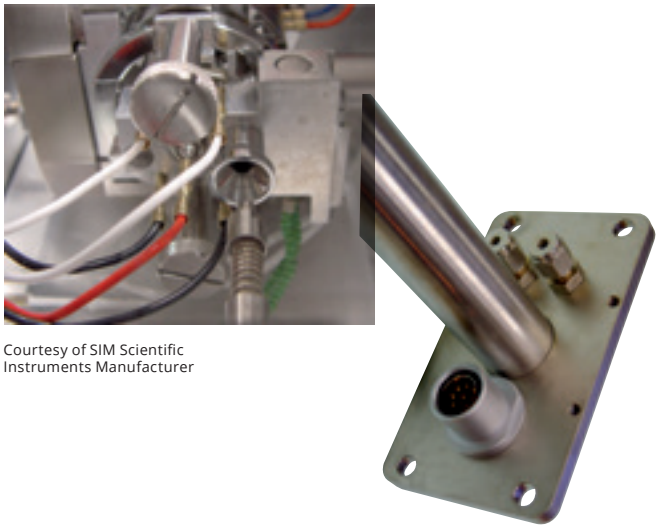
### TEMPERATURE RANGE

Standard operation 200°C - 800°C

### HEATER

Special stainless steel or Inconel alloy. The heater is brazed to improve the thermal transfer between the heater and the tube.

INCREASE RATIO PERFORMANCE / COST



Courtesy of SIM Scientific Instruments Manufacturer

# Thermal Analysis

**Differential Scanning Calorimetry (DSC)**
**Differential Thermal Analysis (DTA)**
**Determination of thermal conductivity**
**Thermo gravimetric analysis**

- In house testing with an accreditated COFRAC laboratory
- Complete thermal system design including thermal modelisation, heater wrapped with custom shape and thermocouples for temperature regulation
- Custom design for faster ramp rates and excellent repeatability

## Differential Scanning calorimetry

The sample is heated in an oven at a given power rate until a phase transition is reached.

The power factor used and the time achieved are recorded making the basis of the analytical process. Additional sensors might be added to record other properties during the process.

- **Temperature range**
From room temperature up to 850°C

- **Heater**
Special stainless steel or Inconel® alloy.
The heater is brazed to obtain the high level of quality and repeatability required by the analytical industry.

SECURE DATE DURING ANALYSIS

# Elemental Analysis

CHNOS analysis

Environmental analysis

Agrarian Analysis

## MATERIAL

Copper or stainless steel tube with heater coiled and torch brazed along the full length.

## OPERATIONAL VOLTAGE/POWER

30 V / 130 W
42 V / 130 W

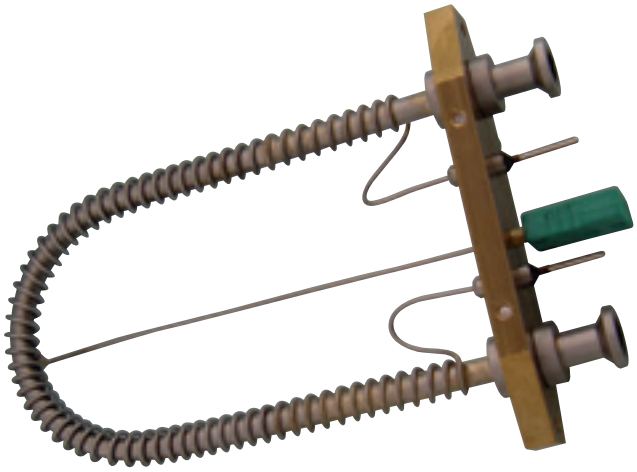
## HEATER ELEMENT

Standard stainless steel sheathed single core heater, Balco® type without cold ends Type K THERMOCOAX thermocouple for regulation

## CHNOS Analysis : Adsorption trap

Enrichment of specific gaseous components by trapping on an adsorbate ; followed by thermal desorption for CHNOS analysis.

THERMOCOAX heaters provide temperature uniformity in the dynamic separation system while the gas are retarded in the specific adsorption traps.



Special adsoption traps extend the dynamic range of the vario EL III (Elementar Analysensysteme GmbH)

## EXPAND END USER APPLICATION BASE

**Concept, design and computering model techniques (CMT) to simulate the prototype working performances**

**Inhouse testing and calibration using COFRAC certified laboratory**

**R&D department for static and dynamic thermal modeling**

# THERMOCOAX


## OUR COMPANY

With nearly 60 years of experience in heating solutions and temperature measurement, THERMOCOAX has acquired a great deal of skill and expertise.
THERMOCOAX products are widely used and endorsed in many industries where the highest quality and utmost reliability are essential. All our mineral insulated cables are manufactured in-house with our proprietary and unique procedures.

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ETALONNAGE N°2.1384

Thermocouples & Heating Elements ATEX certified and notified

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